

TSX: AVL  
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# Developing the Supply Chain for the Clean Economy in Canada

SEPTEMBER 2021



**AVALON**  
ADVANCED MATERIALS INC.

# Safe Harbour Statement

## Forward Looking Information

This corporate presentation contains or incorporates by reference “forward looking statements” within the meaning of the United States Private Securities Litigation Reform Act of 1995 and applicable Canadian securities legislation, which may not be based on historical fact. Readers can identify many of these statements by looking for words such as “believe”, “expects”, “will”, “intends”, “projects”, “anticipates”, “estimates”, “continues” or similar words or the negative thereof. Statements that are not based on historical fact contained in this presentation, including through documents incorporated by reference herein, are forward-looking statements that involve risks and uncertainties that could cause actual events or results to differ materially from estimated or anticipated events or results reflected in the forward-looking statements. Such forward-looking statements reflect the Company’s current views with respect to future events and include, among other things, statements regarding targets, estimates and/or assumptions in respect of reserves and/or resources, and are based on estimates and/or assumptions related to future economic, market and other conditions that, while considered reasonable by the Corporation, are inherently subject to risks and uncertainties, including significant business, economic, competitive, political and social uncertainties and contingencies. These estimates and/or assumptions include, but are not limited to: grade of ore; rare metal and by-product commodity prices; metallurgical recoveries; operating costs; achievement of current timetables for development; strength of the global economy; availability of additional capital; and availability of supplies, equipment and labour. Factors that could cause the Company’s actual results, performance, achievements, developments or events to differ materially from those expressed or implied by forward-looking statements include, among others, but are not limited to, market conditions, the possibility of cost overruns or unanticipated costs and expenses, the impact of proposed optimizations at the Company’s projects, actual results of exploration activities, mineral reserves and mineral resources and metallurgical recoveries, discrepancies between actual and estimated production rate, mining operational and development risks and delays, regulatory restrictions (including environmental), activities by governmental authorities, financing delays, joint venture or strategic alliances risks, or other risks in the mining industry, as well as those risk factors discussed or referred to in the Company’s annual Management’s

Discussion and Analysis and Annual Report filed with the securities regulatory authorities in all provinces and territories of Canada, other than Québec, and available at [www.sedar.com](http://www.sedar.com). Most of the foregoing factors are beyond Avalon’s ability to control or predict. Although the Company has attempted to identify important factors that could cause actual actions, events or results to differ materially from those described in forward-looking statements, there may be other factors that cause actions, events or results not to be as anticipated, estimated or intended. There can be no assurance that the plans, intentions or expectations upon which these forward-looking statements are based will occur.

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# Cleantech materials, such as *lithium* and *rare earths*, are not basic commodities!

- They are typically refined chemical products with precise specifications designed to meet the needs of end-users
- Identify the markets to be served and design an appropriate extraction process to meet the product specifications



## Clean Energy

Solar Panels  
Wind Turbine Motors  
Electric Vehicle Engines  
LED Lights  
Energy Storage



## Aerospace & Defense

Jet Engines  
Space Shuttles  
Missile Detection  
and Guidance



## Energy Efficiency

Rechargeable Batteries  
Electric Motors  
GPS Systems



## Modern Electronics

Circuit Boards  
Hard Drives  
Screen Displays  
High Strength Glass



## Medicine

MRI and X-Ray  
Radiation Therapy  
Vision Improvement  
Medications

# Why Invest in Avalon

- 🌐 **25 years of experience in various Specialty Minerals, notably Lithium, Tantalum, Cesium, Rare Earths and Zirconium**
- 🌐 **Well positioned to develop new critical materials supply chains through application of innovative new extraction technologies, particularly in historic mine wastes**
- 🌐 **Diversified asset base including several advanced projects making it well-positioned for future growth**
- 🌐 **Multiple potential near term revenue streams from advanced lithium project and two historic mine wastes projects**
- 🌐 **ESG audited with a very high ranking ESG risk rating**

# Critical Minerals for Clean Technology

## Project Pipeline



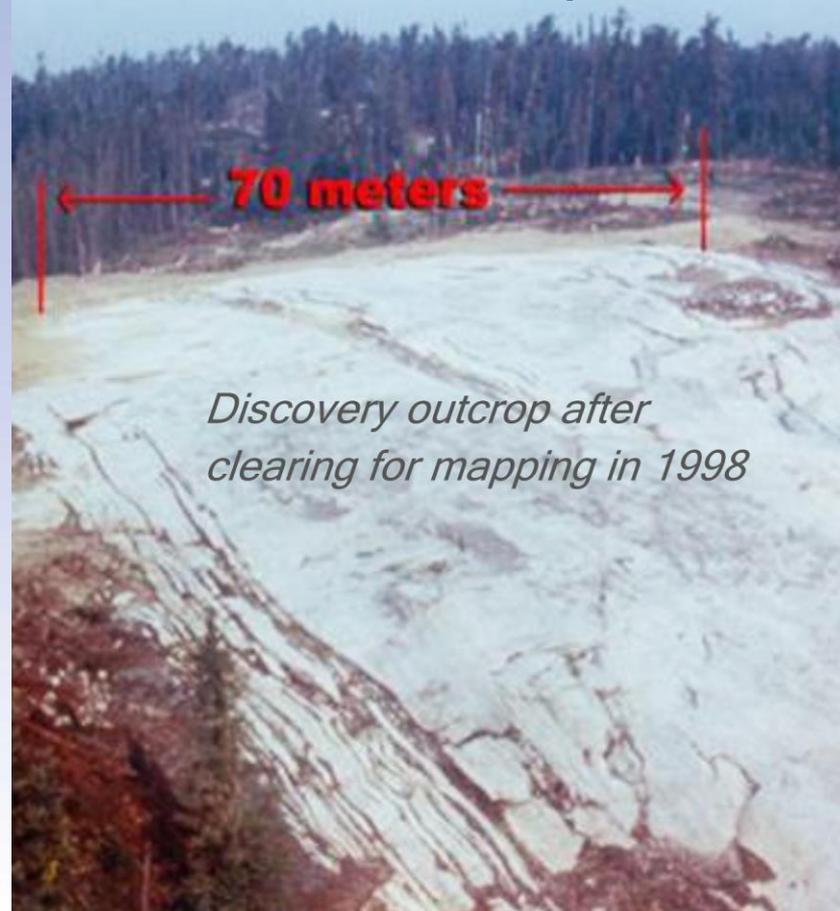


# Separation Rapids Lithium

## Avalon's most advanced project

- **10MM tonne resource of the rare lithium mineral petalite, discovered in 1996 historically used to make high strength glass-ceramics**
- **Updated PEA (2018) exhibits robust economics**
- **100% Ownership + 6,000 acres with exploration potential**
- **Key Infrastructure in place**
- **Minimal environmental footprint**
- **Strong working relationship with local First Nation community**

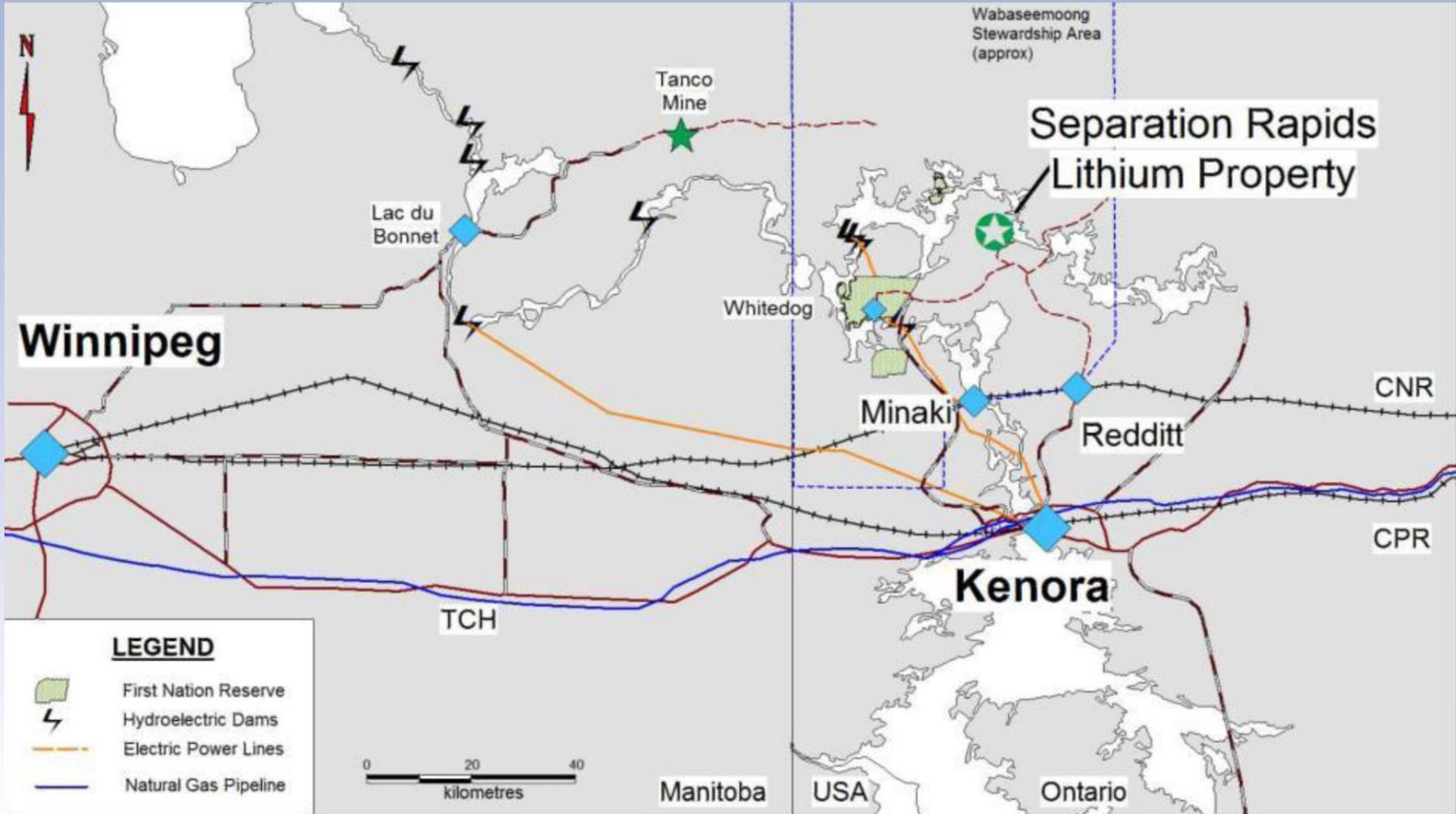
**A large LCT pegmatite enriched in the rare lithium mineral petalite**





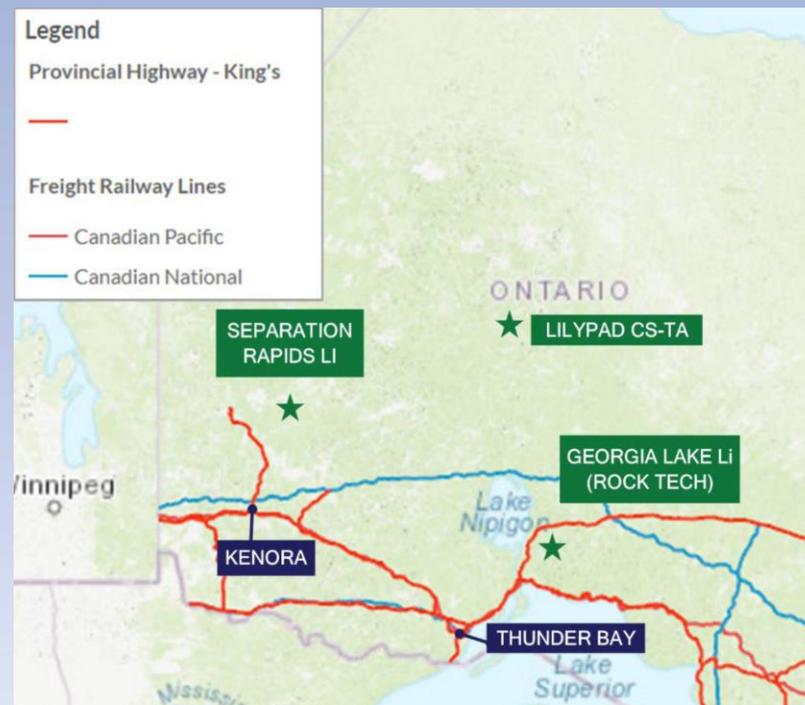
# Separation Rapids Lithium

Located close to Transportation and Power Infrastructure



# Separation Rapids Lithium Battery Materials Supply Chains in Ontario

- Ontario government now committing to establishing more EV and battery manufacturing capacity
  - Opportunity to take advantage of the mineral resource wealth in northern Ontario to build out the entire supply chain*
- Thunder Bay is centrally located with excellent transportation infrastructure providing ready access to markets in North America and in Europe
- Will be designed to accept lithium mineral concentrates from Separation Rapids and other Ontario sources, to produce various lithium products Several vacant industrial sites available on waterfront
- Thunder Bay is home to Lakehead University with plans to increase critical minerals Materials Engineering research and innovation





# Lithium is also critical for high strength glass-ceramic products

*It is not just a material for batteries*

- Lithium additions create thermal shock resistance in: Stovetops, Corningware® Cookware, Fireplace Shields
- Now being used in many new high strength glass products, such as Corning's Gorilla Glass (display screens and automotive) and high strength flexible glass
- Glass-ceramic products are also being used in advanced aerospace and defense technologies (hermetic seals)
- **Petalite, as a very high purity lithium aluminum silicate mineral, is the ideal form of lithium addition to the batch**
  - *Petalite is a very rare mineral and Separation Rapids is the only potential large supply source in North America*
- Lithium additions can also strengthen traditional container glass formulations to extend the life of the container



# Separation Rapids Lithium

## 2018 Updated PEA Highlights

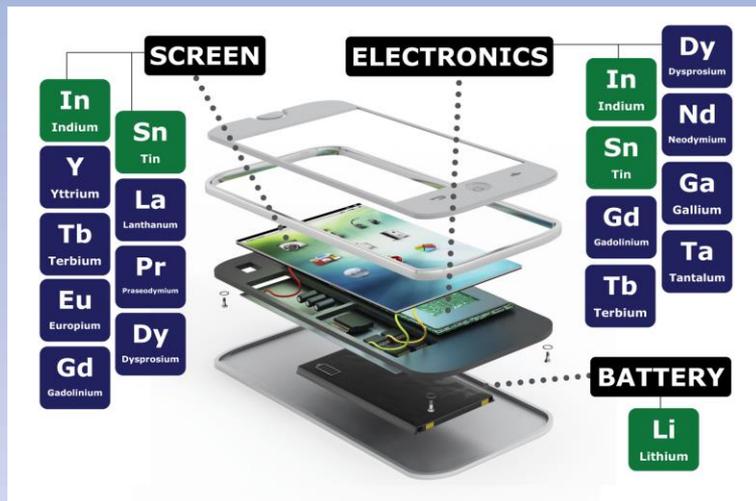
- Initial production of 71,500tpa petalite & 11,800tpa lepidolite and designed to be scalable as lithium demand grows
- Minimal CAPEX of CAD\$77.7MM (475,000tpa mill capacity)
- 20-year operational life
- CAD\$90MM in average annual revenues
- CAD\$60MM in average annual costs
- Pre-Tax NPV (8% discount rate) of CAD\$156MM
- Post-Tax IRR of 22.7% (27.1% pre-tax)



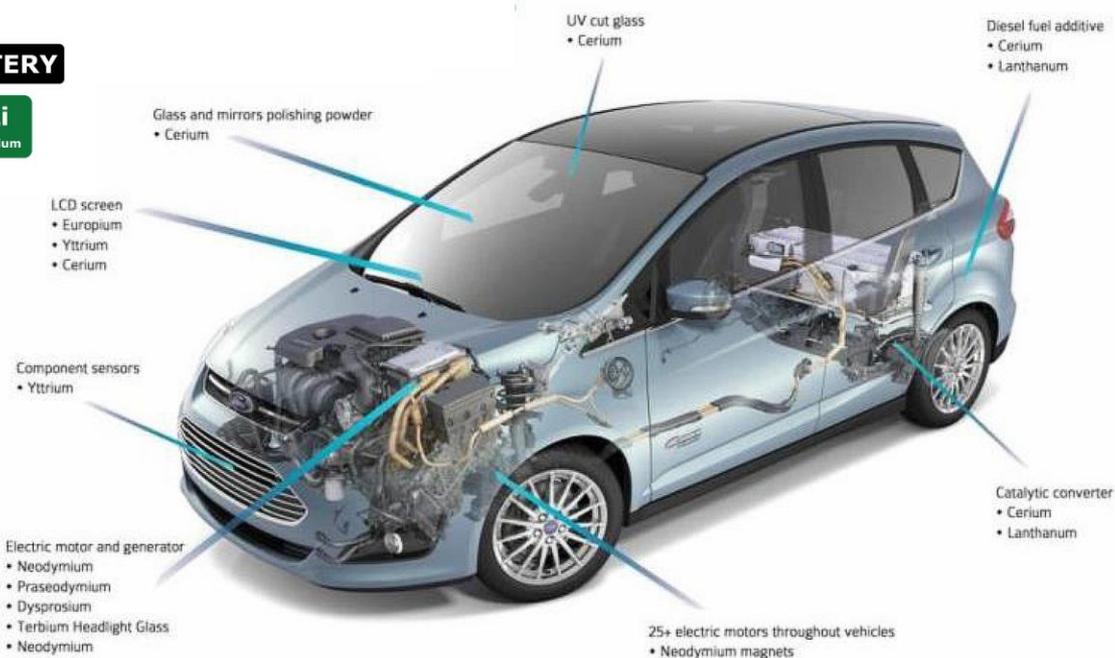
# Other Critical Mineral Opportunities - Rare Earths

- Increasing EV demand = surging demand for both **neodymium** and **praseodymium** used in high strength permanent magnets that are now a vital component of electric motors
- Limited commercial supply sources outside of China
- Governments face a major security of supply issue
- North American governments are providing funding to develop new, domestic REE supply chains
- Recent innovations in process technology are allowing the efficient and responsible production of rare earths that Avalon plans to apply at the Cargill closed phosphate mine where high concentrations of REE occur in the wastes

# Rare Earths - Global Demand Continues to Grow



Rare Earths are found *everywhere* - from your Smartphone to your Motor Vehicle





# Near-Term Revenue in the Circular Economy: Closed Mine Sites

- ④ **Historical mines that once produced a traditional commodity offer near-term critical minerals production opportunities**
- ④ **Not recovered due to lack of demand and low concentrations, these historical mine wastes offer near term revenue potential while remediating the long term environmental liabilities**
- ④ **Efficient recovery of critical minerals from these sources is enabled by applying innovative new extraction technologies**
- ④ **Avalon has interests in two closed minesite projects; East Kemptville Tin-Indium in Nova Scotia and Cargill Phosphate in Ontario with concentrations of rare earths, scandium, and zirconium in the mine wastes plus recoverable phosphate**



# East Kemptville Tin-Indium Closed Mine Site in Nova Scotia

- Deposit discovered in 1976 by Shell Canada, later purchased by RioAlgom in 1982. Original mineable reserve was 55.3mt @ 0.164% tin
- Mined roughly 25mt from 1985-92 as the only primary tin mine in North America. Also produced some by-product copper, zinc & silver
- During the early years of operation, tin recoveries were less than 50% and copper-zinc-silver-indium were not recovered.
- 26 mt of mine wastes containing significant quantities of indium, gallium, germanium and lithium as well as tin, copper and zinc that can be recovered using new technologies while cleaning up the site
- Now working with NS Government to secure access to re-activate



# Advanced Nechalacho Rare Earths Project, NWT

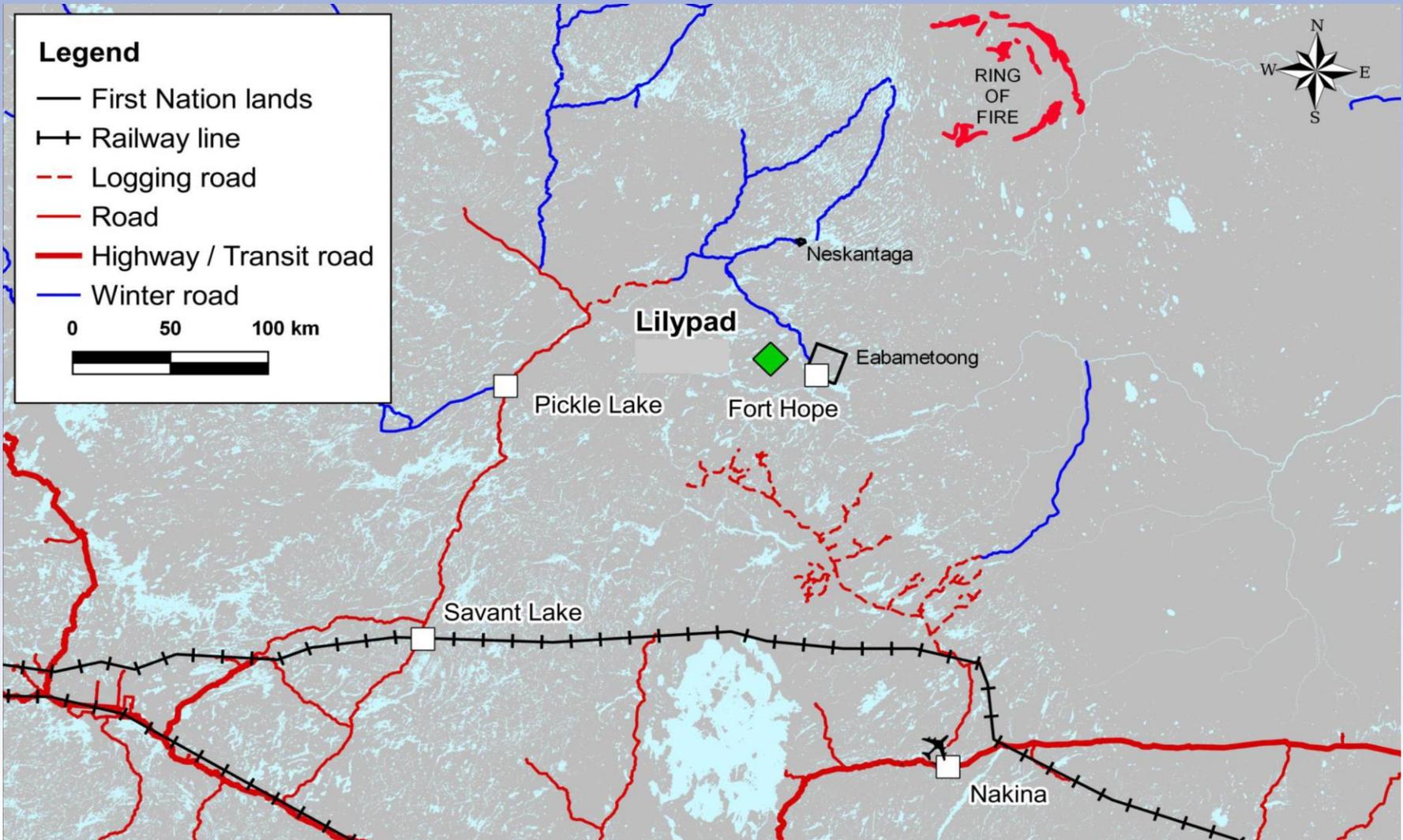
- 🌐 **Unique Heavy Rare Earth-rich and Zirconium resource (66mt)**
- 🌐 **Bankable Feasibility Study in 2013 showed NPV of CAD\$1.35B (10% disc. rate) and Pre-Tax IRR of 22.5%**
- 🌐 **China then removed the export quotas, REE prices dropped, off-take interest disappeared and the project was put on hold**
- 🌐 **Project re-activated in 2019 to consider small scale development of satellite near-surface light rare earth deposit (T-Zone)**
- 🌐 **This satellite deposit was sold to Australian company, Cheetah Resources, who are initiating small-scale development. Once operations and NA markets are established, development of Avalon's original resource can be initiated**



# Lilypad Project - Cesium

- **Avalon's 100% owned Lilypad Project hosts a significant resource of the rare cesium mineral pollucite and recently re-activated the Project in June, 2021**
- **What is Cesium and why is it important?**
  - **Mainly used to create a low viscosity fluid for drilling deep oil wells called cesium formate**
  - **However, with advances in technology, cesium is in growing demand because of its potential in many tech applications**
  - **Atomic clocks & GPS, Specialty glasses, Ion-propulsion motors, High-density alkaline batteries, *to name a few***
  - **Production from traditional sources is in decline and there is a global supply shortage at present**
  - **Cesium products now selling for up to \$US 5,000/kg**

# Lilypad Cesium-Tantalum-Lithium Property



# Committed to and Driven by ESG(I)

- 🌍 **ESG is a cornerstone of Avalon's business model**
- 🌍 **ESGI = Avalon prioritizes Indigenous inclusivity in all of its projects**
- 🌍 **Avalon works closely with our First Nations partners to ensure these communities can participate in the economic upside of our projects**
- 🌍 **Avalon engaged Sustainalytics to audit the company's business practices and has secured a top 5% ESG risk rating**
- 🌍 **Avalon's operating philosophy is aligned with our Cleantech customers**



# Avalon's Capital Structure

## CAPITAL STRUCTURE

*As at July 22, 2021*

<b>Common Shares</b>		<b>362,866,230</b>
<b>Warrants</b>		<b>30,135,000</b>
<b>Options</b>		<b>16,366,250</b>
<b>Deferred Stock Units</b>		<b>475,000</b>
<b>Restricted Stock Units</b>		<b>1,475,000</b>
		<hr/>
<b>Fully Diluted Share Count</b>		<b>411,317,480</b>
<b>Shares Held by Insiders</b>		<b>9,356,334</b>
<b>Convertible Debt</b>	<b>\$</b>	<b>3,420,000</b>

# Share Price Performance



## 15 Year Stock Price

Rare Earths see price spike and major media publicity because of China imposing export quotas

## 2 Year Stock Price

Price jumps twice in reaction to news on Rare Earths and China threatening to impose new export quotas on the US



# Avalon's Management and Operations Team



**Donald S. Bubar, M.Sc., P. Geo**  
*President and CEO*

Don Bubar is a geologist with over 40 years of experience in mineral exploration and development in Canada. Mr. Bubar is a graduate of McGill University (B.Sc., 1977) and Queen's University (M.Sc., 1981). From 1984 to 1994, he worked for Aur Resources Inc. as Exploration Manager and later VP, Exploration. Mr. Bubar has been President and CEO of Avalon since 1995.



**William Mercer, Ph.D., P. Geo**  
*Vice President, Exploration*

Dr. Mercer has been VP, Exploration with Avalon since 2007. He enjoyed a 32-year career with the Noranda/Falconbridge group, ultimately serving as Director-Geology and Geochemistry. Dr. Mercer's exploration career spans over 30 countries and a variety of commodities including base metals, gold, bauxite and rare metals.



**R.J. (Jim) Andersen, CPA, CA, CPA (Illinois), CGMA**  
*Vice President, Finance*  
*Corporate Secretary and CFO*

Mr. Andersen is a Chartered Professional Accountant with 30 years of experience in the mining industry. He graduated with high distinction from the University of Toronto (B.Comm., 1991) and started his career with the mining services team at Coopers & Lybrand in Toronto, Ontario. He received his C.A. designation in 1993, after having placed 20th in Ontario on the 1992 Uniform Final Exam.



**Mark Wiseman, BSc (Hon), MBA**  
*Vice President, Sustainability*

Mr. Wiseman is a biologist with over 40 years of health, safety, environment and social responsibility (HSEC) experience. He is a graduate of Guelph University (BSc, 1979) and Laurentian University (MBA, 1989).



**Cindy Hu, CPA, CA, CPA (Illinois)**  
*Controller*

Ms. Hu is a Chartered Professional Accountant with over 20 years of experience in public accounting practice and financial reporting, primarily for junior public companies and private wealth management portfolios.



**Zeeshan Syed, M.Sc.**  
*Manager, Government Affairs & New Business Development*

Experienced Executive with cross-sector expertise in compliance, government and regulatory affairs, investor relations and strategy development.



# Avalon's Board of Directors Staff and Consultants

## Board of Directors

**Donald S. Bubar, P.Geo.**  
*CEO*

**Alan Ferry, CFA**  
*Chair and Audit Committee Chair*

**John Fisher, BSc., M.B.A**

**Naomi Johnson, LL.B.**

**Marilyn Spink, P.Eng.**

## Staff and Consultants

**Ron Malashewski, P.Eng (AB)**  
*Community Relations, Kenora*

**David Marsh, FAusIMM (CP)**  
*Senior Metallurgist*

**Chris Pedersen, P.Geo.**  
*Senior Project Geologist*

**Joseph Plut, B.A.**  
*Director, Sales and Marketing*



# Investment Overview

-  **Avalon is a leader in North America in the development of supply chains for critical materials needed in clean technology**
-  **Security of supply outside of China is becoming even more critical for the North American industry**
-  **Avalon offers investors near term revenues with long term value growth as new projects come online and production grows**
-  **Staged development of several world class critical minerals properties with exposure to a broad range of rare elements**
-  **All of Avalon's projects are located in Canada where government is now very supportive of establishing critical minerals supply chains**
-  **Experienced management team with a history of prioritizing shareholder value**

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ADVANCED MATERIALS INC.

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*Critical Minerals for Clean Technology*